REMARKS

The Applicant has reviewed the Examiner's Final Rejection dated December 30, 2003. The Applicant has amended claims 1, 5 - 10, 14 and 15 and cancelled claim 2 and 11. The Applicant hereby provides the following remarks concerning the Examiner's rejection of the claims under 35 U.S.C. 103(a).

The Applicant hereby requests that the Examiner reconsider the finality of rejection. In the Applicant's response to the previous Office Action, the Applicant requested clarification of several of the Examiner's claim rejections over the cited reference. The Examiner has not provided the requested clarifications. The Applicant is repeating some of the requests herein and asks that the final rejection be withdrawn.

The Examiner in the Response to Arguments states that the Applicant has in the previous amendment pointed out differences between the specification and the Sklar reference and that the Examiner is not rejecting the Applicant's specification but is rejecting the Applicant's claim language. With this amendment, the Applicant corrects the claims to properly claim the invention and to overcome the Examiner's rejections.

The Examiner has rejected claims 1-15 under 35 U.S.C. 103(a) as being unpatentable over Bernard Sklar, DIGITAL COMMUNCIATIONS Fundamentals and Applications dated 1988.

Referring to claim 1, the Examiner asserts Sklar teaches: A method of obtaining coarse synchronization in a frequency hopped/direct sequence spread spectrum (FH/DSS) time division multiple access (TDMA) data link network (Fig 10.20 Pg 567), the method comprising:

Tuning a first receiver to a first frequency out of a plurality of frequencies used in the data link network (output of Frequency Hopper per Fig 10.20 Pg 567)

Observing signal strength of signals received on a first frequency during a sample time period to obtain a sample energy pattern (output of Integrator per Fig 10.20 Pg 567)

Determining an expected energy pattern corresponding to a time uncertainty window, the expected energy pattern based upon a known hopping

pattern (The Integrator integrates a time interval or uncertainty time window in which the output is Threshold tested per Fig 10.20 Pg 567)

Comparing the sample energy pattern to a first portion of the expected energy pattern, the first portion of the expected energy pattern corresponding to a first time period within the time uncertainty window (Comparator per Fig 10.20 Pg 567)

Determining whether the first time period is a coarse synchronization candidate as a function of the comparison between the sample energy pattern and the first portion of the expected energy (Search Control per Fig 10.20 Pg 567)

Regarding the Examiner's rejection of claim 1, in Applicant's invention a receiver is tuned to a fixed first frequency in the frequency hopping sequence. Sklar does not disclose tuning to a fixed first frequency but discloses tuning to a plurality of frequency hopping frequencies.

In Applicant's invention signal strength of signals received on the fixed first frequency are observed and collected for a sample time period over a plurality of samples on the fixed first frequency to obtain a sample energy pattern. Sklar does not disclose a fixed first frequency and collecting samples on the fixed first frequency to obtain a sample energy pattern on the fixed first frequency but discloses collecting samples over a plurality of frequencies from the frequency hopper.

In Applicant's invention a threshold is applied to the sample energy pattern to obtain a received energy pattern 415 as shown in Figure 4C by using a fraction of the energy components on the fixed first frequency that exceed the threshold. Sklar does not disclose a received energy pattern that has components on a fixed first frequency that exceed a threshold. In Sklar an integrated level from an integrator is applied to a comparator that compares the integrated level to a threshold.

In Applicant's invention an expected energy pattern 505 on the fixed first frequency over a time uncertainty window based on a known hopping pattern is determined. There is no such expected energy pattern at a fixed first frequency disclosed in Sklar.

In Applicant's invention the received energy pattern 415 is compared to a first portion of the expected energy pattern 505 on the fixed first frequency within the time uncertainty window. Sklar does not disclose a received energy pattern at a fixed first frequency, does not disclose an expected energy pattern at a fixed first frequency, and does not disclose comparing the two. The comparator in Sklar compares a fixed threshold level to a DC level out of the integrator corresponding to a filtered, detected, and integrated IF signal.

In Applicant's invention, the first time period is determined to be a coarse sync candidate from the comparison described above. There is no such determination in Sklar. The search control starts and stops the PN code generator search as determined by the comparator comparing the integrator output to the threshold.

Sklar does not teach, suggest, disclose, or make obvious the Applicant's invention. The Applicant has amended claim 1 to properly claim the invention and to further distinguish over Sklar. Claim 1 is now believed allowable over Sklar.

Regarding claim 2, the Examiner states that wherein observing signal strength of signals received on the first frequency during the sample time period to obtain the sample energy pattern further comprises: Obtaining a received energy pattern by observing the signal strength of signals received on the first frequency during the sample time period; comparing the received energy pattern to a threshold; and obtaining the sample energy pattern by eliminating energy components from the received energy pattern which do not exceed the threshold (The Examiner states that "eliminating energy components from the received energy pattern which do not exceed the threshold" has a broad meaning. If received signal which is threshold does not meet the threshold testing per Fig 10.20 Pg 567 then it is eliminated and the serial acquisition is repeated until a candidate is found per Para 10.5.1.2 per Pgs 565-569)

Regarding claim 2, the Applicant has cancelled claim 2.

Regarding claim 3, the Examiner states wherein the first time period corresponds to a first plurality of time slots used in the data link network and which fall within the time uncertainty window, and wherein determining the expected

energy pattern further comprises determining the first portion of the expected energy pattern based upon an expected hopping pattern for the first plurality of time slots (The Integrator per Fig 10.20 Pg 567 utilizes an integration time or uncertainty time window which is based upon search dwell time as well as probability of detection per search dwell time as well as probability of detection per Para 10.5.1.2 pgs 565-568.)

Regarding claim 3, the Applicant does not see where in Sklar the integration time or uncertainty time window is based on a search dwell time as well as a probability of detection for a FH system. The discussion below Figure 10.19 on page 566 pertains to a DS system. There is no discussion or indication of what the integration time of the integrator in Figure 10.20 might be. The Applicant respectfully requests that the Examiner show specifically where this asserted disclosure occurs in Sklar for a FH system. Furthermore, the Applicant does not see where in Sklar time slots of a TDMA network are disclosed as shown in Figure 3A of the present application. The Applicant respectfully requests that the Examiner show specifically where this asserted disclosure of time slots occurs in Sklar. The Applicant is repeating these requests for clarification not responded to by the Examiner in the final rejection. Claim 3 depends on claim 1 now believed allowable thereby making claim 3 allowable.

Regarding claim 4, the Examiner states that wherein the sample period has a duration which is substantially equal to the first time period which fall within the time uncertainty window ("substantially" has a broad meaning. The Integrator per Fig 10.20 Pg 567 utilizes an integration time or uncertainty time window which is based upon search dwell time as well as probability of detection per Para 10.5.1.2 pgs 565-568. The Examiner believes that it is within the level of one skilled in the art to adjust parameters. The integrator time period can be adjusted based upon search dwell time as well as probability of detection per Para 10.5.1.2 pgs 565-568.)

As discussed above, Sklar does not disclose a received energy pattern at a fixed first frequency. Furthermore, the Applicant fails to see where the integrator

time period is discussed for the integrator in Figure 10.20. Claim 4 depends on claim 3 now believed allowable thereby making claim 4 allowable.

Regarding claim 5, the Examiner states wherein determining whether the first time period is a coarse synchronization candidate further comprises determining whether the sample energy pattern and the first portion of the expected energy pattern are substantially a match (the Examiner asserts that "substantially match" has a broad meaning and that the function shown in Figure 10.20 per Pg 567 determines if there is a "substantial match" based threshold which is calculated based upon probability of detection and dwell time per Para 10.5.1.2 pgs 565-568.)

As discussed above Sklar does not disclose a received energy pattern at a fixed first frequency that is compared to the first portion of the expected energy pattern at the first frequency. Claim 5 is believed to be allowable.

Regarding claim 6, the Examiner states and if the first time period is determined to not be a coarse synchronization candidate (the Examiner believes that "Coarse synchronization" has a broad meaning and that the frequency hopper per Fig 10.20 per Pg 567 provides coarse synchronization), then further comprising:

comparing the sample energy pattern to a next portion of the expected energy pattern, the next portion of the expected energy pattern corresponding to a next time period within the time uncertainty window (The process of Serial Acquisition is repeated until a candidate is found per Para 10.5.1.2 Pgs 565-568); and

determining whether the next time period is a coarse synchronization candidate as a function of the comparison between the sample energy pattern and the next portion of the expected energy pattern (The process of Serial Acquisition is repeated until a candidate is found per Para 10.5.1.2 Pgs 565-568).

Regarding claim 6, the Examiner is respectfully asked to explain why "Coarse synchronization" has broad meaning. As discussed above Sklar does not

disclose a received energy pattern at a fixed first frequency and does not disclose a first time period at the fixed first frequency. Claim 6 is believed to be allowable.

Regarding claim 7, the Examiner states that and further comprising sequentially repeating, for subsequent time periods within the time uncertainty window until a coarse synchronization candidate is found, the step of comparing the sample energy pattern to the next portion of the expected energy pattern, and the step of determining whether the next time period is a coarse synchronization candidate as a function of the comparison (The Examiner believes that the process of Serial Acquisition is repeated until a candidate is found per Para 10.5.1.2 Pgs 565-568);.

Sklar does not disclose the received energy pattern and the expected energy pattern being at the fixed first frequency. Claim 7 is believed to be allowable.

Regarding claim 8, the Examiner states that and after a coarse synchronization candidate (The Frequency Hopper output per Fig. 10.20 per Pg 567 can be adjusted for both fine and coarse synchronization) is found further comprising:

Tuning the first receiver to a second frequency out of the plurality of frequencies used in the data link network (The Examiner believes that the Tracker described per Pgs 568-570 provides input into the Frequency Hopper per Fig 10.20 Pg 567 to fine tune for a second frequency);

Observing signal strength of signals received on the second frequency during a second sample time period to obtain a second sample energy pattern (The Examiner believes that the Tracker described per Pgs 568-570 provides input into the Frequency Hopper per Fig 10.20 Pg 567 to fine tune for a second frequency as well as obtain a second energy pattern).

Determining a second expected energy pattern during a time period corresponding to the second sample time period, using the coarse synchronization candidate as

a reference time, based upon the known hopping pattern (The Examiner believes that the Integrator integrates a time interval or uncertainty time window in which the output is Threshold tested per Fig 10.20 Pg 567)

Comparing the second sample energy pattern to the second expected energy pattern corresponding to the second sample time period (Comparator per Fig 10.20 Pg 567); and

Verifying the accuracy of the coarse synchronization candidate based upon the comparison between the second sample energy pattern and the expected energy pattern (Search Control per Fig 10.20 Pg 567)

Regarding the Examiner's rejection of claim 8, the Examiner is respectfully asked to show where in Sklar it is disclosed that the frequency hopper can be adjusted for both fine and coarse synchronization. Further regarding claim 8, Sklar does not disclose a sample period at a fixed second frequency in the frequency hopping sequence as claimed by the Applicant. The Tracker in Sklar is for fine tuning and has nothing to do with verifying coarse synchronization by comparison of the second sample period at the second frequency to a second sample energy pattern at the second frequency. The integrator in Sklar integrates over an unspecified time interval. The comparator in Sklar compares a threshold level to a filtered, detected, and integrated output. There is no comparison of a second received energy pattern to the second sample time period. The search control does not verify the accuracy of the comparison. The search control increments the PN code generator (see page 566 lines 8-12). The Applicant has amended claim 8 similar to claim 1 to further distinguish over Sklar. Claim 8 is believed to be allowable.

Regarding claim 9, the Examiner states and further comprising:

Tuning each of a plurality of other receivers to different one of a plurality of other frequencies (Fig 10.17 Pg 564)

Observing signal strength of signals received on each of the plurality of other frequencies during the sample time period to obtain a plurality of other sample energy patterns (Fig 10.17 Pg 564)

Determining a plurality of other expected energy patterns corresponding to the time uncertainty window, each of the plurality of other expected energy patterns being based upon a known hopping pattern and upon a corresponding one of the plurality of other frequencies (Fig 10.17 Pg 564)

Comparing each of the plurality of other sample energy patterns to a first portion of the corresponding one of the plurality of other expected energy patterns, the first portion of each of the plurality of other expected energy patterns corresponding to a time period within the time uncertainty window (Fig 10.17 Pg 564)

Determining whether the time period within the time uncertainty window is a coarse synchronization candidate as a function of the comparisons (Fig 10.17 Pg 564)

In regard to the Examiner's rejection of claim 9, the Examiner is respectfully asked to read Sklar page 563 last paragraph and the caption of Figure 10.17. From this the Examiner will find that what is shown is direct sequence parallel search acquisition that has nothing to do with a plurality of other receivers in a data link network as claimed by the Applicant. The Applicant has amended claim 9 similar to claim 1 to further distinguish over Sklar. Claim 9 is believed allowable over Sklar.

Regarding claim 12, the Examiner states wherein the first time period corresponds to a first plurality of time slots used in the data link network and which fall within the time uncertainty window (The Examiner assumes the Integrator per Fig 10.20 Pg 567 utilizes an integration time or uncertainty time window which is based upon search dwell time as well as probability of detection per Para 10.5.1.2 pgs 565-568. The Examiner believes that it is within the level of one skilled in the

art to adjust parameters. The Integrator time period can be adjusted based upon search dwell time as well as probability of detection per Para 10.5.1.2 pgs 565-568).

The Examiner is respectfully asked to show where in Sklar the first time period corresponds to a first plurality of time slots of a TDMA network such as disclosed in Applicant's invention. Claim 12 is believed allowable over Sklar.

Regarding Claim 13, the Examiner states wherein the sample period has a duration which is substantially equal to the first time period (The Examiner believes that "Substantially equal to the first time period" has a broad meaning. The Examiner thinks that the Integrator per Fig 10.20 Pg 567 utilizes an integration time or uncertainty time window which is calculated based upon search dwell time as well as probability of detection per Para 10.5.1.2 pgs 565-568.)

The Examiner then states that Sklar does not expressly call for: Determining an expected energy pattern but teaches Threshold testing. The Examiner further believes it would be obvious to one of ordinary skill in the art at the time of the invention that the expected energy pattern was used in the calculations that determined the threshold of Sklar.

As discussed above Sklar does not teach a sample period or a first time period as claimed by the Applicant. Claim 13 is believed allowable.

Referring to claim 10, the Examiner asserts that Sklar teaches: A radio for use in a frequency hopped/direct sequence spread spectrum (FH/DSS) time division multiple access (TDMA) data link network (I would be obvious that the receiver per Fig 10.20 Pg 567 be utilized as a radio because it is utilized for receiving spread spectrum), the radio comprising:

A first receiver adapted to be tuned to a first frequency out of a plurality of frequencies used in the data link network (fig 10.20 per Pg 567 or first receiver tuned to a plurality of frequencies)

Signal strength determining circuitry adapted to observe signal strength of signals received on the first frequency during a sample time period (Integrator per Fig 10.20 Pg 567 or circuitry)

Processing circuitry coupled to the signal strength determining circuitry and adapted to determine a sample energy pattern in response to the observations by the signal strength determining circuitry (Fig 10.20 Pg 567 or processing circuitry)

The processing circuitry being further adapted to determine an expected energy pattern corresponding to a time uncertainty window (Integrator per Fig 10.20 Pg 567 or processing circuitry)

The expected energy pattern being based upon a known hopping pattern, the processing circuitry being adapted to compare the sample energy pattern to a first portion of the expected energy pattern (The Integrator integrates a time interval or uncertainty time window in which the output is tested per Fig 10.20 Pg 567 or processing circuitry)

The first portion of the expected energy pattern corresponding to a first time period within the time uncertainty window (Comparator per Fig 10.20 Pg 567)

The processing circuitry further being adapted to determine as function of the comparison whether the first time period is a coarse synchronization candidate (Search Control per Fig 10.20 Pg 567 or processing circuitry)

Regarding the Examiner's rejection of claim 10, the Examiner's admission that Sklar discloses a first receiver tuned to a plurality of frequencies is correct. In Applicant's invention a first receiver is tuned to a fixed first frequency for a sample period, while in Sklar the receiver is tuned to the plurality of frequencies.

The Examiner's assertion regarding the signal strength determining circuitry is wrong. The integrator does not observe signals received on a fixed first

frequency but on the plurality of frequencies. The Examiner is asked to explain what is meant by "or circuitry".

The Examiner's assertions regarding the processing circuitry are wrong. Sklar does not disclose a received energy pattern at the fixed first frequency, an expected energy pattern at the first frequency, comparing the received energy pattern a first portion of the expected energy pattern. The integrator compares the average value of the plurality of frequencies to a threshold. The Applicant asks the Examiner to explain what is meant by "or processing circuitry".

The Applicant has amended claim 10 in a fashion similar to claim 1 to properly claim the invention and to further distinguish over Sklar. The Applicant believes that claim 10 is allowable over Sklar.

Regarding claim 11, the Examiner asserts wherein the processing circuitry is further adapted to: obtain a received energy pattern by observing the signal strength of the signals received on the first frequency during the sample time period (Integrator per Fig 10.20 Pg 567 or processing circuitry. The Examiner believes it would be obvious to one of ordinary skill in the art at the time of the invention calculation of the threshold takes into account signal strength for a given probability of detection)

Compare the received energy pattern to a threshold (Threshold per Fig 10.20 Pg 567) and

Determine the sample energy pattern by eliminating energy components from the received energy pattern which do not exceed the threshold (The Examiner believes that "eliminating energy components from the received energy pattern which do not exceed the threshold" has a broad meaning. The Examiner further asserts that if received signal strength which is threshold does not meet the threshold testing per Fig 10.20 Pg 567 then it is eliminated and the serial acquisition is repeated until a candidate a candidate is found per Para 10.5.1.2 per Pgs 565-568)

The Applicant has cancelled claim 11.

Regarding claim 14, the Examiner states wherein if the first time period is determined to not be a synchronization candidate (If the Comparator determines that synchronization has not be found per Fig 10.20 per Pg 567)

then the processing circuitry is further adapted to compare the sample energy pattern to a next portion of the expected energy pattern (The processing circuitry of Fig 10.20 per Page 567 continues on a sequential search per Para 10.5.1.2 per Pgs 565-568),

the next portion of the expected energy pattern corresponding to a next time period within the time uncertainty window (The processing circuitry of Fig 10.20 per Page 567 continues on a sequential search per Para 10.5.1.2 per Pgs 565-568),,

and wherein the processing circuitry is adapted to determine whether the next time period is a coarse synchronization candidate as function of the comparison between the sample energy pattern and the next portion of expected energy pattern (The Comparator or processing circuitry determines that synchronization has not be found per Fig. 10.20 per Pg 567.

The Examiner states that Sklar does not expressly call for: Determining an expected energy pattern but teaches Threshold testing or processing circuitry.

The Examiner believes it would be obvious to one of ordinary skill in the art at the time of the invention that the expected energy pattern was used in the calculations that determined the threshold which is in processing circuitry of Sklar shown in Fig 10.20 Pg 567.

As discussed above Sklar does not disclose a first time period on a fixed first frequency, a received energy pattern on the fixed first frequency, an expected energy pattern on the fixed first frequency, etc. Claim 14 is allowable over Sklar.

Referring to claim 15, the Examiner asserts that Sklar teaches: An apparatus for obtaining coarse synchronization in a frequency hopped/direct

sequence spread spectrum (FH/DSS) time division multiple access (TDMA) data link network (Fig 10.20 Pg 567), the apparatus comprising:

Means for tuning a first receiver to a first frequency out of a plurality of frequencies used in the data link network (Frequency Hopper per Fig 10.20 Pg 567 or means for tuning)

Means for observing signal strength of signals received on the first frequency during a sample time period to obtain a sample energy pattern (Integrator per Fig 10.20 Pg 567 or means for observing)

Means for determining an expected energy pattern corresponding to a time uncertainty window, the expected energy pattern being based upon a known hopping pattern (The Integrator integrates a time interval or uncertainty time window in which the output is Threshold tested per Fig 10.20 or means for determining)

Means for comparing the sample energy pattern to a first portion of the expected energy pattern, the first portion of the expected energy pattern corresponding to a first time period within the time uncertainty window (Comparator per Fig 10.20 Pg 567 or means for comparing)

Means for determining whether the first time period is a coarse synchronization candidate as a function of the comparison between the sample energy pattern and the first portion of the expected energy pattern (Search Control per Fig 10.20 Pg 567 or means for determining)

The Examiner states that Sklar does not expressly call for: Determining an expected energy pattern but teaches Threshold testing.

The Examiner believes it would be obvious to one of ordinary skill in the art at the time of the invention that the expected energy was used in the calculations that determined the threshold of Sklar.

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Regarding the Examiner's rejection of claim 15, the remarks above apply. Specifically, the frequency hopper of Sklar does tune a first receiver to a first frequency out of a plurality of frequencies and to many others in the frequency hopping sequence. The receiver in Applicant's invention tunes to a fixed first frequency. The Examiner is asked to explain what is meant by "or means for tuning" in the rejection.

Sklar does not disclose a means for observing signal strength of signals received on the fixed first frequency during a sample time period to obtain a sample energy pattern on the first frequency. The integrator in Sklar averages all the frequencies of the plurality of frequencies. The Examiner is asked to explain what is meant by "or means for observing" in the rejection.

Sklar does not disclose a means for determining an expected energy pattern on the fixed first frequency. It is not clear from Sklar what time interval the integrator integrates over. The Examiner is asked to explain what is meant by "or means for determining".

Sklar does not disclose a means for comparing the received energy pattern on the fixed first frequency to a first portion of the expected energy pattern on the fixed first frequency. Sklar discloses comparing all the frequency hoping frequencies. The comparator compares the filtered, detected, and integrated signal to a threshold and does not compare a sample energy pattern of several signals on the fixed first frequency. The Examiner is asked to explain what is meant by "or means for comparing".

Sklar does not disclose a means for determining whether the first time period is a coarse synchronization candidate as a function of the comparison between the sample energy pattern on the fixed first frequency and the first portion of the expected energy pattern on the search frequency. The search control in Sklar is used to increment the code generator and has nothing to do with determining coarse synchronization candidates. The Examiner is asked to explain what is meant by "or means for determining".

The Applicant has amended claim 15 in a fashion similar to claim 1 to properly claim the invention and to further distinguish over Sklar. Claim 15 is believed to be allowable.

CONCLUSION

The Applicant hereby requests that the Examiner reconsider the finality of the rejection since all of the Applicant's requests for clarification have not been addressed. The Applicant has amended claims 1, 5 - 10, 14 and 15 and cancelled claims 2 and 11 to further distinguish over Sklar as suggested by the Examiner. It is now believed that the application is in a condition for allowance. In light of the foregoing, consideration of the amended claims is hereby requested, and a Notice of Allowance is earnestly solicited.

Respectfully submitted,

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